

**What is claimed is:**

1. A method of analyzing pattern information pieces each being a set of information units, each of the information units and pattern information pieces having a scalar representing a specific characteristic as an attribute, the method comprising the steps of:

calculating an activity level of each of the pattern information pieces according to the information unit scalars of the pattern information pieces;

repressing a predetermined number of times the calculated activity level of each pattern information piece according to repression rules that are determined in consideration of the other pattern information pieces; and

generating a set of information units each having a new scalar and a scalar representing the set of information units, according to the information unit scalars and repressed activity levels of the pattern information pieces.

2. A method of analyzing input information, comprising the steps of:

calculating an activity level of a partial or whole set of corresponding cells of each stored pattern with respect to an input pattern, each cell of the input and stored patterns having a scalar representing a specific characteristic as an attribute;

repressing the calculated activity level of each stored pattern a predetermined number of times according to repression rules that are determined in consideration of the other stored patterns; and

creating a set of cells each having a new scalar according to the cell scalars and repressed activity levels of each stored pattern.

3. The method of claim 2, further comprising the step of:

generating a set of cells each having a new scalar by collecting the created cell sets of a group of the stored patterns, or generating a scalar by collecting the repressed activity levels of a group of the stored patterns.

4. A method of analyzing input information, comprising the steps of:

converting an input pattern consisting of cells into a converted pattern consisting of cells and storing the converted pattern;

calculating an activity level of a partial or whole set of cells of each of at least one of stored patterns with respect to the converted pattern according to cell values of the stored and converted patterns;

repressing each of the calculated activity levels a predetermined number of times according to repression rules that are determined in consideration of a negative repression coefficient and the other calculated activity levels;

composing, after each repressing step, a new cell value for each cell according

to a present cell value and a corresponding one of the repressed activity levels, or composing a new scalar according to the repressed activity levels; and

providing the new cell values or the new scalar as a response pattern or a response scalar for the input pattern.

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5. The method of claim 4, wherein:

the repressing step changes each activity level  $A(i)$  by  $\delta A(i)$  according to a repression coefficient  $W(i)$  as follows:

$$\delta A(i) = W(i) \{ \psi(A(1)) + \psi(A(2)) + \dots \\ + \psi(A(i-1)) + \psi(A(i+1)) + \dots + \psi(A(M)) \}, \quad \text{and}$$

$$\psi(x) = \begin{cases} x & : x > 0 \\ 0 & : \text{else.} \end{cases}$$

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6. A method of generating patterns from input information, comprising the steps of:

entering an input pattern into a network of elements arranged at predetermined intervals, each of the elements directing an input impulse toward a next element, and thereafter, rejecting to direct input impulses toward the next element until predetermined conditions are met; and

generating a response rule corresponding to the input pattern according to routes formed by the elements in response to the input pattern.

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7. The method of claim 6, further comprising the step of: providing an input pattern with a depth along a time axis to form a set of input patterns, the set of input patterns being used to form new input patterns.

8. The method of claim 7, further comprising the steps of:

dividing the set of input patterns into blocks;

shifting the blocks in predetermined directions according to predetermined rules; and

combining the shifted patterns to form the new input patterns.

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9. The method of claim 6, further comprising the step of:

changing a refractory period of each element, to store information about or influence of an input pattern, the refractory period being a period in which the element responds to no stimulation and which is changed in response to the frequency of stimulations to the element, the intervals of stimulations to the element, or the state of the element.

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collecting the repressed activity levels of a group of the stored patterns.

14. An apparatus for analyzing input information, comprising:
  - activity level calculating means for calculating an activity level of a partial or
  - 5 whole set of corresponding cells of each stored pattern with respect to an input pattern;
  - mutual repressing means for repressing the calculated activity level of each
  - stored pattern a predetermined number of times according to repression rules that are
  - determined in consideration of the other patterns; and
  - composition means for creating a new pattern according to the repressed
  - 10 activity levels and the stored patterns.

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